

**REMARKS**

The Final Office Action dated October 20, 2011, has been received and carefully noted. The above amendments and the following remarks are being submitted as a full and complete response thereto.

Claims 8-18 are rejected, claims 1-7 are withdrawn, and claim 8 is amended. Thus, claims 1-18 are pending in this application. Support for the amendments may be found in the specification as originally filed such as paragraphs [0040] and [0043]. Applicants submit that no new matter is added. Applicants respectfully request reconsideration and withdrawal of the rejections.

**Entry of Response Proper**

Entry of this Amendment is proper under 37 C.F.R. §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issues requiring further search and/or consideration on the part of the Examiner as the Amendment merely clarify previously recited features; (c) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) place the application in better form for appeal, should an appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to objections raised in the Final Rejection. Entry of the Amendment is thus respectfully requested.

**Claim Rejections – 35 U.S.C. §103**

Claims 8-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Yamoto (U.S. Patent Publication No. 2002/0104477, hereinafter “Yamoto”) in view of Wang (U.S. Patent Publication No. 2004/0121085, hereinafter “Wang”), and alternatively further in view of Matsuda (U.S. Patent No. 5,808,316, hereinafter “Matsuda”). Applicants respectfully traverse this rejection.

Claim 8, as amended, recites a method for forming a laminated thin SiN film on a substrate comprising, among other features, an activating step of generating active species; a film forming step of forming a thin SiN film for each unit layer on a substrate; a surface treating step of surface-treating the thin film for each unit layer by the hydrogen gas active species; another surface treating step of surface-treating the thin film for each unit layer by the active species of the gas containing the nitrogen component; and ***repeating one of the one surface treating step and the other surface treating step for each unit layer***, wherein the surface treating step and the other surface treating step can be carried out in any order, ***wherein the last step of the final repetition of said repeating is the other surface treating step***, and whereby a laminated thin film is formed by the unit layers. Applicants respectfully submit that Yamoto, Wang, and Matsuda, alone or in combination, do not teach, suggest, or render obvious all of the features recited by claim 8.

The Office Action cites Yamoto for teaching a film forming step of forming a SiN film using a catalyst body. The Office Action admits that Yamoto does not teach forming a laminated film of multiple layers or surface treating each layer with treatment

steps including hydrogen active gases and active species of the gas containing a nitrogen component. In order to cure the admitted deficiency, the Office Action cites Wang. The Office Action alleges that Wang teaches separate treatment steps of treating with a hydrogen gas active species and an active species of the gas containing a nitrogen component at paragraph [0033]. The Office Action further alleges that Wang teaches the separate steps in view of paragraphs [0025] and [0028]. Applicants respectfully submit that the Wang does not cure the deficiencies of Yamoto.

Wang discloses treating a silicon nitride film with a nitrogen source gas at the end of the deposition step. See paragraph [0028]. The silicon nitride film disclosed by Wang is thicker than the embodiments disclosed in the instant application. Furthermore, Wang teaches the above noted treating step is not necessary to achieve good silicon nitride film. See paragraph [0028]. Wang further teaches treating the silicon nitride film with hydrogen radicals whose source is ammonia and/or hydrogen gas. See paragraph [0032]. One of the source gases or both of source gases are heated by a wire to form the hydrogen radicals and fed to the silicon nitride film. See paragraph [0033]. However, Wang does not teach that a treatment step with ammonia gas and a treatment step with hydrogen gas one after the other as recited by claim 8. Furthermore, for the same reasons already of record, Applicants respectfully submit that the Office Action has improperly interpreted Wang as teaching alternate treatment steps of  $H_2$  and  $NH_3$ . There is no teaching or suggestion in Wang of this feature, and the Office Action's conclusion is merely a presumption, that has no explicit, inherent, or inferential basis. The Office Action's assertion that "one of ordinary skill in the art would understand" is not

backed by any reference or evidentiary showing. Therefore, Yamoto in view of Wang does not teach or suggest all of the features recited by claim 8.

Additionally, Applicants have amended claim 8 to further recite that the last step of the repeating is the other surface treating step. For purposes of antecedent basis, Applicants note that a repeating step inherently includes a last step and a final repetition. See MPEP § 2173.05(e). Applicants respectfully submit that Wang is silent with regard to this feature. Thus, Applicants respectfully submit that Yamoto in view of Wang does not teach or suggest all of the features recited by claim 8.

Matsuda is cited merely for teaching that silicon films may be formed using silane gases such as  $\text{SiH}_4$  or chlorine containing silane gases. Thus, Matsuda does not cure the above-described deficiency of Yamoto.

In view of the above, the Applicants respectfully submit that none of Yamato, Wang, and Matsuda, nor any combination thereof, teach, suggest, or render obvious at least the combination of features recited by amended Claim 8.

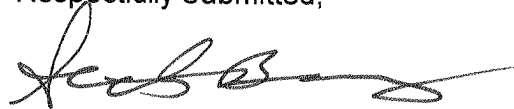
Claims 9-18 depend directly or indirectly from Claim 8. The Applicants respectfully submit that these dependent claims are allowable at least for the same reason Claim 8 is allowable, as well as for the additional subject matter recited therein. For at least the above reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of Claims 8-18 under 35 U.S.C. §103(a) over Yamoto, Wang, and Matsuda.

**Conclusion**

Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

In the event that this paper is not being timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to Counsel's Deposit Account Number 01-2300, referencing Docket Number 029567-00011.

Respectfully submitted,



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